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ABSTRACT

The Internet is still in its infancy yet it has become one of the most frequently used resources for obtaining information of all sorts. From scientific findings to gossip to support groups, it would be difficult to find a topic not represented on the Internet. While there is a wealth of valid information, the Internet has more than an ample supply of erroneous information. Students are one broad group of users who use the Internet for various purposes: to complete assignments, chat with friends, look for jobs, research career options and to seek product information, just to name a few. The purpose of this study was to look at how high school students determine whether information they find on the Internet is valid. Focus groups were used to discover how some students make this evaluation. The study found that while students are aware there is a tremendous volume of worthless information on the Internet along with much valid information, they do not seem to have many tools to help them critically evaluate the information they find. To determine what tools students could use, librarians were contacted and asked for their guidelines on how to discern the gold from the garbage on the Internet. A summary of these techniques is included in this paper. Appendixes include: the focus group report; e-mail inquiry submitted to reference librarians; and online sources for more evaluation tools. (Contains 17 references.) (Author)

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ED 471 122

DO THEY KNOW WHAT THEY'RE DOWNLOADING?
A STUDY OF HOW PEOPLE DETERMINE THE VALIDITY OF INFORMATION FROM THE INTERNET

By
Maureen Radlick

THESIS

Submitted in partial fulfillment of the requirements
For the Master of Science degree in Communication
In the Graduate Studies Program at
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Allendale, Michigan

Winter Term
2002

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Abstract

**Do They Know What They're Downloading?
A Study of How People Determine the
Validity of Information from the Internet**

The Internet is still in its infancy yet it has become one of the most frequently used resources for obtaining information of all sorts. From scientific findings to gossip to support groups, it would be difficult to find a topic not represented on the Internet. While there is a wealth of valid information, the Internet has more than an ample supply of erroneous information. Students are one broad group of users who use the Internet for various purposes: to complete assignments, chat with friends, look for jobs, research career options and to seek product information, just to name a few. The purpose of this study was to look at how high school students determine whether information they find on the Internet is valid. Focus groups were used to discover how some students make this evaluation. The study found that while students are aware there is a tremendous volume of worthless information on the Internet along with much valid information, they do not seem to have many tools to help them critically evaluate the information they find. To determine what tools students could use, librarians were contacted and asked for their guidelines on how to discern the gold from the garbage on the Internet. A summary of these techniques is included in this paper.

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– Sincerely, Maureen

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CHAPTER I

Introduction

Situation Analysis

Many people use the Internet to gather information for use either in their personal or business lives. The information gathered is used for decision making about everything from which blender to purchase to which stocks to sell, and developing opinions on anything from haute couture to presidential candidates. It appears that use of the Internet will continue to increase. In 1997, the Council of American Survey Research Organizations conducted a survey and found "that 17% of middle managers and upper-level executives of major U.S. companies say they've used the Internet for marketing research. Of those, 64% plan to use it in the next five years" (Kosek, 1997, p. 48).

When it comes to use of Internet information in an educational environment, Cornelia Brunner, associate director of Center for the Children and Technology/EDC says:

> The greatest challenge [of using the Internet] has to do with the undigested nature of the information on the Net. Kids have never before been exposed to information in variety – not only by subject but in quality. Everyone is worried about pornography on the Net, but I personally think misinformation is far more dangerous (Tally, 1995, p. 14).

Since so many decisions and opinions depend on the information retrieved from the Internet, it is of utmost importance that the users get valid information or at least have ways to determine if the information is valid.

The accuracy of information retrieved from the Internet is an issue important to many groups of people: students, educators, consumers, business managers, politicians, government officials, and health professionals, just to name a few. Inaccurate information posted on the Internet could conceivably affect the lives of millions of people around the

globe. With this in mind, and with the awareness that it is nearly impossible to police the Internet, it is important for Internet users to use discretion when retrieving information. Through the use of focus groups, the author hopes to learn if student Internet users are aware of retrieving any incorrect information and if so, how did they know that they retrieved incorrect information? If this study is able to determine how people determine whether are retrieving valid information, further study may uncover methods of teaching others how to glean the good from the bad information in cyberspace.

Purpose of Study/Problem Statement

The Internet is a virtual and actual worldwide network of computers to which nearly anyone can post information. There are no regulations as to what may or may not be posted (excepting some forms of pornography). According to Jadad & Gagliardi (1998),

> Seeking useful and valid information on the Internet can be difficult because of the speed and lack of control with which the information is accumulating . . . Judging whether the information is applicable and credible may present a greater challenge than just searching for information (p. 611).

It is up to each user to discern whether the information he or she has retrieved is valid. Although the Internet does not have the traditional filters used in print media, there are some filters. Brandt (1996) outlines three traditional ways in which information gets filtered:

> First, if it is written and/or issued by an authoritative source such as the federal government or a reliable organization, it is generally accepted at face value as having validity. Second, if it is authenticated as part of an editorial or peer review process by a publisher, it is generally accepted as reliable. Third, if it is evaluated by experts, reviewers, or subject specialists/librarians as part of collection development, it is generally accepted as authoritative (p. 44).

However, most information on the Internet does not undergo the same rigors of examination that paper-journal articles and books do. Search engines have their own criteria for selection of citations and links. Brandt notes that many end users do not realize the limitations of search engines. Thus, a person who relies only on a search engine may get search results that are far from comprehensive and may not access the best sources for the information sought.

Significance of the Problem

Despite its shortcomings, the Internet is increasingly becoming the primary source of information for many people. Due to the structure of the Internet, there is little control or evaluation of the information posted. Virtually anyone, anywhere can create a Web page with any information they like. Cornelia Brunner, associate director for The Center for Children's and Technology, says the danger of this is that:

> You can have people on the Internet saying things that are truly outrageous and wrong, and using all the tricks of the trade to substantiate them. In denying the Holocaust, for example, they could bring up statistics and show all kinds of "proof" in writing that looks and sounds similar to other, more legitimate arguments kids have heard before (Tally, 1995, p. 14).

Further evidence that erroneous information is being disseminated over the Internet is a warning issued in June 1999, by the Federal Trade Commission (FTC). In great detail, the FTC warns of misleading information about health products and treatments.

The impact of false, inaccurate or misleading information found on the Internet will grow as the number of users grows. Computer Industry Almanac, Inc. (2002) places the number of Internet users in the United States at 149 million at the end of 2001. Worldwide users for the same year were tallied at 533 million. By the end of 2005, Computer Industry Almanac predicts that the number of worldwide Internet users will

double to 1.12 billion. They also forecast that by the end of 2007, the number of worldwide users will be 1.46 billion. With this many people using the Internet as a primary or even secondary source of information, the importance for users to have critical evaluation skills grows greater.

Purpose of the Study and Organization of Goals

Clearly, many people have a stake in the accuracy of information disseminated over the Internet. For the purpose of this paper, research focused on Internet users in an educational environment. The author chose students because students are more likely than members of the general public to have access to the Internet. Obviously, there are few controls to information posted on the Internet. Users are often on their own when it comes to determining if the information they retrieve from the Internet is valid or not.

The research questions addressed by this study are as follows: Are Internet users aware of any invalid information they have retrieved? If so, how did they know it was invalid?

Organization of the Thesis

This thesis is arranged in five chapters and follows American Psychological Association (APA) publication guidelines. Chapter I analyzes the situation and significance of the validity of information retrieved from the Internet. Chapter II is comprised of a literature review to determine the scope of other scholarly research on this topic. Chapter III outlines the methodology used for conducting research in conjunction with this thesis paper. Chapter IV presents the findings of the research. Conclusions and recommendations for further study are included in Chapter V.

CHAPTER II

Review of the Literature

Relevance to Studies in Communication

Use of the Internet does not fit neatly into one of the six dominant modes of interaction identified by Rubin, Rubin, & Piele (1996) which are interpersonal communication, small group communication, language and symbolic codes, organizational communication, public communication, and mass communication. People use the Internet all six ways.

E-mail and instant messaging are widely used for interpersonal communication. In its Digital Economy 2002 report, The U. S. Department of Commerce reports that in 2000, 35.5% of the U. S. population used e-mail, and 2.5% went online to make phone calls (2002, p.17). Newsgroups and chat rooms also provide forums for interpersonal communication (Russell, 2002).

Language and symbolic codes play an important role in Internet exchanges. Since plain text does not convey feeling, shorthand symbols called emoticons and glyphs have been put into use (Russell, 2002). Symbols such as :) for smiling, and :(to express sadness or disappointment, are ubiquitous among Internet communicators. In addition, an abbreviated language, sometimes called "texting" or "TXTING," has evolved as well. The acronym "ROTFLOL" indicates that a person is "rolling on the floor laughing out loud" at something he or she finds funny. With increased use of instant and short messaging, the shorthand is condensed even more because entering text into a pager or cell phone can be tedious. It may take as many as four key presses to enter a single letter.

Organizational communication via the Internet has fast become a part of American business practices. Whether the communication is between an editor and freelance writer or between a manufacturer and raw materials supplier, the Internet is used as a key communications tool by organizations every day.

The Internet has an important role in public communication, also. In March 2000, the Social Security Administration launched an electronic newsletter which is sent to individuals or organizations who request it (Information Intelligence Online Newsletter, 2000). The newsletter provides updates on specific issues such as disability, Medicare and regulations. Corporations provide product information to consumers, and those that are publicly traded provide financial information for investors, potential investors and government regulators. As more people gain access, the Internet will play an increasingly important role in public communication.

The same can be said for mass communication. Radio and television stations provide program streaming making it possible to hear and view the programs virtually anywhere in the world. Some television shows, "Oprah" for example, let the cameras continue rolling past the scheduled network broadcast time and continue the show with a video feed to the Internet.

There is no single descriptor of an Internet user except "human." Internet users are male and female, very young and very old, of every race and nationality, and even financial class distinctions fade when access is provided through public libraries or government programs. MSNBC (as cited by Nua Internet Surveys, 2002) reports:

> The digital divide seems to be narrowing in the U.S. Internet use among households earning less than USD15,000 per annum increased by 25 percent a year between December 1999 and September 2001, while the rate of growth among households earning USD75,000 or more was just 11 percent.

> Black and Hispanic households are also going online at a more rapid rate than white and Asian-American households, Furthermore, the number of rural households getting Net access for the first time is increasing at a faster rate than the number of urban households (p. 1).

In a press release, The U.S. Department of Commerce (2002) states that 47.1% of the population (15 years and older) used the Internet in 2000, and children lead the way in adopting use of the Internet:

> Ninety percent (or 47.4 million) of children between the ages of 5 and 17 now use computers at home and at school; 75% of 14- to 17-year olds now use computers at home and at school and 65% of the 10- to 13-year olds use the Internet. Households with children under the age of 18 are more likely to access the Internet (62.2 percent) than households with no children (52.2 percent (p. 1).

The amount of time people spend navigating the Internet varies greatly across the general population. However, on average, in December 2001, Internet users spent 17 hours online per month (Miller, 2002). Some individuals use it occasionally, other use it many hours every day. The reasons people use the Internet vary greatly as well. The U.S. Department of Commerce (2002) reports people go online to make phone calls, search for jobs, shop, pay bills, do job related tasks, take courses, check news, search for information and use e-mail. Many people use the Internet for more than just one purpose. For example, students may use the Internet as research tool, a job seeking tool and a way to keep up with their friends.

The type of information one can find on the Internet varies greatly as well. There is solid, well researched information along with hoaxes and fictional statistics. Anecdotal information abounds, as do opinions. There is a common saying, "Anyone can post anything on the Internet." While this caveat has become cliché, it is true that anyone with Internet access can post anything with little technical skill and little to no money.

Summaries of Related Studies

There is a great and growing need for resources in the classroom and the Internet is increasingly the resource of choice by students. However, since the Internet is a relatively young reference source, the research on the ways the Internet affects students is in its infancy. Soloway & Wallace (1997) describe the situation faced by many schools:

> . . . classrooms are information-poor environments. Thirty copies of the same, outdated book is not good enough, and the yearly $200 available to the school's library for all the subjects for all acquisitions is not going to do it either. And in these times of cutbacks, we can't expect the public library to be particularly responsive. Where else are kids going to get the information resources they need but from the Web? (p. 11).

Financial limitations are not just the worry of school libraries; classes for every subject from art to zoology have very limited resources for educating students at all levels. The United States economy, post-September 11, 2001, may further squeeze educators' budgets.

Soloway & Wallace (1997) document the frustration students experience when they encounter "digital circles." This happens when multiple lists refer students to the same page. Confusion results when every webpage says the same exact thing and students need to learn how to navigate the Internet productively. Soloway & Wallace also recognize a problem in the mindset of some teachers and students who believe they should be able to find the answer they seek on a webpage. While the Internet can be a valuable source for some information, many researchers and educators point out that just because a student finds an answer, it does not mean he or she found the correct answer or answers.

Students have embraced the Internet and this has changed the way they conduct research. Davis & Cohen (2001) conducted an analysis of microeconomics

term papers written by undergraduates between 1996 and 1999. They found a drop of 11 percentage points in the number of book citations, an increase in newspaper citations of 12 percentage points, and Web citations increased by 12 percentage points. In short, there has been a dramatic decline in the frequency of scholarly resources cited.

A study by the Pew Internet and American Life Project (Minkel, 2001) shows academic behavior changing at the middle and high school levels as well. The study found that nearly three times as many students (71%) used the Internet as the primary source of information for their most recent school project as those who used the library (24%) as their primary source.

In a 1999 article about the level of information literacy among students, Lori Roth, Senior Director of Academic Services & Professional Development at California State University, documents pitfalls in using the Internet and calls for more research. Specifically, she cites the need to determine the level of students' competency and to develop a campuswide program to ensure students have the skills to critically evaluate digital information.

Many Internet users do not understand the way Internet is structured and how search engines operate. According to Brandt, many people "don't even realize that each search engine searches its own database of selective citations of links and not the entire Internet" (1996, p. 44). Furthermore, he illustrates the difference between information that is published and printed in the traditional way and information that goes directly online. In traditional publishing, information is typically disseminated this way: research findings are first written as a lab report, which leads to a

conference paper and then an article in a peer-reviewed journal, and that article is then indexed. At any step along the way, the information is subject to review and challenge. Online publishing, however, lacks these controls and information can be posted directly to Usenet groups, listservs, and webpages. Online information is not necessarily subject to peer review and the monetary cost of posting is negligible.

CHAPTER III

Methodology

Study Design Overview

This study was designed to address the following research question: How do junior and senior high school students evaluate information they retrieve from the Internet? This main question will be explored along two paths. First, are high school Internet users aware of having retrieved invalid information from the Internet? Second, if Internet users have retrieved invalid information, how did they know it was invalid?

Using focus groups facilitated by the author, qualitative data were collected in an effort to answer the aforementioned research questions. The population studied was high school students in their junior and senior years who use the Internet for various purposes.

The author used a variety of research methods to learn as much as she could about how to effectively conduct focus groups. The author consulted books, online sources and an expert with experience in conducting focus groups.

The focus groups were conducted on April 19, 2001, at the Kent Career/Technical Center (KCTC) in Grand Rapids, Michigan. In this accidental sample, 20 students were asked by their instructors to participate in the focus groups. The students, whose ages range from 16 to 18, come from various high schools in Kent County, Michigan. The only criteria for participation was that they had used the Internet to retrieve information. Participation in the focus groups was voluntary and no compensation was provided for the participants.

The author/moderator was careful not to let any one person dominate the discussion and tactfully encouraged students who seemed reticent to speak to participate in the conversation. Overall, the students exhibited respect for their fellow students and seemed

to listen carefully to what others said which led to meaningful dialog among the students and moderator.

When the focus group findings showed that Internet users had few evaluative techniques, the author sought to determine if such techniques are available. Because librarians are experienced in evaluating many types of information, and because most libraries offer Internet access, reference librarians across the United States were solicited for advice.

Using the Dogpile search engine, the author searched for libraries with reference services. In all, 24 libraries across the U.S. were contacted and included 17 university and college libraries, 6 city public libraries and The Library of Congress. The librarians were contacted by e-mail during November and December 2001, and responded by e-mail to the author's query. The open-ended query sought to find out how librarians evaluate online information. A copy of the query is included with the appendices. Whenever possible, the e-mails were addressed to a specific reference librarian. Some library websites do not list individuals' names and in those cases, the e-mail inquiry was sent to the libraries' reference departments.

After receiving a dozen in-depth responses and several responses that simply provided Internet links for sites that discuss evaluation of Internet information, the author found that the replies were becoming repetitive and ceased sending e-mail inquiries. The advice of these librarians was used to compile the recommendations presented in Chapter IV.

Validity and Reliability

Focus groups, by their very nature, supply qualitative rather than quantitative data. The findings resulting from these focus groups may not be representative of a larger

population. However, the findings do offer an in-depth look at how some students evaluate information from the Internet.

The integrity of the focus group findings is dependent on the respondents' honesty. The author assumes respondents provided truthful accounts of their use of the Internet and how they evaluate Internet information.

Study Protocol/Data Collection Procedure

Three separate focus groups were held and each ran 50 to 60 minutes. The groups were comprised as follows.

Group A

Eight female students from the first shift Cosmetology program. Age breakdown:

Age	No. of Participants
16	1
17	3
18	4

Group B

Five male students from the second shift Hospitality program. Age breakdown:

Age	No. of Participants
17	2
18	3

Group C

Seven male students from the third shift A+ Certification program. Age breakdown:

Age	No. of Participants
16	3
17	2
18	2

Sample Selection

High school students were chosen for the focus groups because they are more likely than members of the general population to be users of the Internet. Gail Persons, KCTC principal, was instrumental in arranging and conducting the focus groups. He allowed access to students and provided a conference room for the focus groups. The only consideration requested by Mr. Persons was that he receive a copy of the Moderator's Report from the focus groups.

One advantage to conducting the focus groups at KCTC is that the students attending KCTC come from high schools throughout the county. Having students from diverse geographic locations provides a broader perspective than if students had just come from one or a few high schools.

A copy of the Moderator's Report is included in the appendices.

CHAPTER IV

Findings of the Study

Descriptive Data about the Focus Groups

While the responses of the focus group participants can not be considered representative of how all junior and senior high school students evaluate information on the Internet, they do provide insight to the way some students do so. It is believed that the participants were truthful and candid in their responses.

Several students indicated that they were aware of instances when information they retrieved from the Internet was invalid. Students said they knew the information was wrong in several ways: they had previous knowledge of the topic, they knew the person who was written about, and they knew people who had discovered something they thought was true turned out to be a lie.

The results of the students obtaining unreliable information range from benign to life-threatening danger. In the case of incorrect information discovered while conducting research for a class project, the student simply disregarded it and turned to books for the correct information. However, in the case of the female student who corresponded with a man who lied to her about his age, the result could have been tragic. As a female participant told the story, this student traveled from Grand Rapids to Chicago to meet who she thought was an 18-year-old man; the man was actually 45 years old. Fortunately, in this case no harm was done but one only has to read newspapers and watch television news to learn of such meetings that take a tragic turn. Whether the students find and use invalid information from websites or in chat rooms populated by those who misrepresent themselves, there could be significant consequences.

While the students are generally aware that "anyone can post anything on the Internet," some believed that information found on more than one site could be trusted.

Interpretation of Findings

The students in this study realize that not ail Internet information is reliable, yet they are taught few or no techniques for evaluating the information. Some of the students did not convey confidence in their ability to discern what is valid on the Internet and seemed to desire direction from teachers or parents. In response to direct questioning, the students indicated that neither parents nor teachers adequately teach them how to critically analyze what they see on the Internet. There also appears to be a lack of understanding by some parents and teachers of the way the Internet works and what can be found there.

While students are savvy enough to not believe all they see or read on the Internet, they often depend on their feelings to determine is the information is credible. While this common sense approach works for some simple things, it may not be effective for more complex topics. Also, at 16 to 18 years of age, the students' life experience is limited and could lead students to draw incorrect conclusions.

The library was cited as the place to go for the "real deal" by most of the students, yet many use the Internet to find what they're looking for rather than actually going to the library. This disparity between what they know and what they do seems to result from the fact that it is just easier to use the Internet than the library.

Resources Available for Students

Rather than using evaluative criteria, students in the focus groups mostly relied on their own instincts to determine credibility. The findings from the focus group discussions indicate that students are not aware of the numerous techniques and resources

available for evaluating the credibility and accuracy of information. Libraries are treasure-troves of evaluative criteria but students do not seem to have knowledge of these resources. Furthermore, many of these resources are easily accessed, free of charge, on the Internet.

Summary of Focus Group Findings

The students studied seem to be aware that the Internet is filled with valid and reliable information as well as that which is false and misleading. They report that their parents and teachers are not teaching them evaluative skills for determining information validity. In the absence of evaluative tools and techniques, the students rely on their instinct and judgment to determine if information is reliable.

Tools and Techniques for Evaluating Internet Information

A remark by Jean M. Alexander (personal communication, Nov. 28, 2001), head librarian at Hunt Library at Carnegie Mellon University, succinctly summarizes what Internet users should know. "They should be aware that the Internet is a mirror image of the whole world, with all the good, bad and ugly." That said, there are numerous specific ways to determine the reliability and credibility of online information.

First, information from electronic sources such as the Internet can be evaluated in the same manner as print information. According to Penn State University reference librarian Rebecca Bichel (personal communication, Dec. 5, 2001), the five traditional criteria used by librarians for evaluating information are: 1.) Accuracy; 2.) Authority; 3.) Objectivity; 4.) Currency; and 5.) Coverage. Librarians recommend fact checking against a respected source and warn that information can easily be taken and moved out of context or modified in some manner without detection.

Accuracy. Accuracy of electronic information can be confirmed in a variety of ways. One is to refer to hard copy information found in books, encyclopedias, newspapers, journals, etc. Another way to confirm accuracy is to consult with other authoritative sources such as official organizations, educational institutions, recognized experts and government agencies.

Authority. The authority of the source plays an important role in evaluating information as well. Because of the low economic barriers to publishing on the Internet, there is more "junk" information on the Internet than found in a library's print sources. Also, there is a distinction between the resources that are available free and those for which the user is charged a fee. Often, libraries purchase access to fee-based information and there is no charge to library patrons to access the information.

Objectivity. To determine objectivity, it is necessary to know who is the author or source of the material. Information from parties that are neutral and do not promote one point of view over another are considered more reliable than a source with bias. However, this does not mean that the information should be disregarded if bias is evident. If a source exhibits bias, the reader should be cautious and check with other sources to determine the validity of the information.

Currency. When seeking information, whether on the Internet or from other sources, librarians advise to determine if the material is current. In some fields of study, the knowledge base grows continually through research and new discoveries. In a field such as genetics, information from five years ago is vastly different than what is available now. However, this does not mean that out-of-date information should always be discounted. If one is trying to understand the history of a certain topic, researching older

materials can be very valuable. Information seekers need to evaluate how they are going to use the information in addition to evaluating the information itself.

Coverage. The librarians surveyed say the more sources a student consults the more likely they are to find reliable information. Naomi Lederer (personal communication, Nov. 27, 2001), librarian at Colorado State University, says,

> One of the things I try to convince students of is the need to identify more sources than are required for a particular assignment. How do you know these are the best five articles on a topic if they are the only five you looked at? The Web has created a lot of 'azy researchers: they find a site and think it is fine.

Other specific aspects many librarians advised to consider about a website are: appearance, style, consistency, arguments, evidence, documentation, authority of author, authority of publisher, the ability to verify the information, reviews and recommendations.

Librarians recommend using every source available, including print and online sources as well as tapping experts' knowledge through interviews. The more sources a student can find to confirm the information, the more likely they are to find reliable information.

When librarians were asked if there were websites they trust most of the time, the responses included the sites of: highly-regarded scholarly libraries; most U. S. Federal government agencies; many non-governmental organizations; scholarly societies, publishers of reference works (for example, Congressional Quarterly and Bowker); and newspapers of record (such as the Wall Street Journal).

Checking multiple sources is also important in light of the fact that even the most well respected newspapers of record (such as The New York Times) err at times.

Knowing how many sources to consult is a matter of judgment, depending on the purpose of the research. For example, research for a NASA project would warrant tracking down more sources than research for a school assignment.

Triangulation is a method librarians use by looking for a fact from three different websites or sources. To meet the triangulation standard, the material must come from different websites, cannot be written by the same person, and it cannot be sponsored by the same company or organization in all three locations.

According to some librarians, many Internet users do not understand the way search engines operate and may be placing their confidence in sources that are not the best ones available. Many search engines (Google is one example) are structured so that the first websites listed as the result of a search are those weighted by popularity. However, just because a website is popular, it does not necessarily mean the information posted there is reliable. If Internet users do not understand this, they may just access the first sites that show up in the search results not realizing there may be better sources for the information for which they are looking.

Reverse searching is a feature on some search engines that can be used to discover more about a certain website. By prefacing the URL with "link:" and omitting "http://www." from the website address, the Internet user can detect what sites are linked to the site being evaluated. While this method is more of a measure of popularity than credibility, it can help the user discover hidden relationships. Evaluating the sites linked to a certain site can aid in determining credibility.

Using appearance as a key indicator of the reliability of a website is not recommended. As noted earlier, economic barriers to posting a webpage are low, making

it easy for just about anyone to post information in an attractive format. In addition, there are readily available software programs that can be used to build a website, even if one does not possess a high degree of technical skills.

Not all techniques for determining if a website is reliable fall into empirical processes. Librarians also recommend paying attention to "gut reactions" when evaluating websites. In addition, they rely on their colleague's recommendations and they create bookmarks for sites that have been reliable in the past. The experience of the researcher, Internet user or librarian plays a significant role in determining the reliability of information.

Librarians' Advice for Evaluating Government Websites

While many government sites are reliable, they are not infallible. Two sites specifically mentioned as trustworthy are those of the U.S. Census Bureau and the U.N. Statistical Office. These agencies get a vote of confidence because they create the statistics; they do not just report them. The more hands a number goes through, the more likely errors will occur. Information directly from the source has more credibility than information passed along and repeated.

While print sources have traditionally been deemed the most reliable, it must be noted that some government information is now available in electronic format *only*.

While federal U.S. government sites are usually trustworthy, state and local governments in the U.S. are somewhat less reliable according to Pam Benjamin (personal communication, Dec. 8, 2001), reference librarian at the Cleveland Public Library. Sometimes the information posted by states and municipalities is not complete or updated in a timely manner.

Librarians warn that Internet users should be alert to the fact that governments have agendas. The purpose of the information, whether to persuade or inform, can be used as an indicator or reliability. Some government agencies' bias is quite evident as in the case of the Navy using its website to recruit new members, or the State Department's efforts to persuade other governments or public opinion.

Governments of other nations may or may not be reliable but a user can look at some elements to determine credibility. Websites posted by governments of nations which have few watchdog groups or other groups that monitor government activity require careful evaluation. Information posted by governments of former Iron Curtain nations and military governments should be carefully evaluated. One should be aware of the politics of the way nations present themselves to the rest of the world.

Librarians' Advice About Education Websites

Education sites are generally reliable when the information posted is provided by college and university faculty. (Foreign educational institutions were not part of this inquiry so these comments only apply to education sites in the United States.) Typically, an education website has a URL that ends with ".edu" but all .edu webpages are not created equal. Some could be student webpages where class assignments are posted. Whether the assignment got an A or and F is unknown, and without knowing more about the author, credibility cannot be affirmed or denied. Another possibility is that a student posted the information as a joke or satire.

Librarians' Advice About Online Journals

Online journals tend to fall into one of two categories: those that provide the same information as presented in the organization's print journal and those that are published only online.

Online journals that are electronic duplicates of print journals are identical in degree of reliability, especially if the journal is one libraries stock. To determine the reliability, find out how much copy from the hard (printed) copy is also reproduced online. Determine if the most recent issue is available online and if the journal's earliest editions are online.

Online journals that only exist in cyber-reality may be "garbage" or may be "worthwhile." Again, one must remember that there are few restrictions to publishing on the Internet and that anyone is free to publish on the Internet. To determine if an online journal is credible, librarians ask several questions. Who is the journal produced by? A professional organization, private organization, company or an individual? What are the credentials of the editorial board? Is the journal refereed? The answers to these questions will help determine the reliability of an online journal. Just because a journal is offered only in a digital format is not a reason to doubt the content.

Librarians' Advice About Company Websites

Like governments, companies often have an agenda. There are several caveats when considering information from company websites. First, it is not very likely that a company would publicize information that reflected on it negatively. When posting any type of news, it is not likely to be presented as a balanced report; the news will typically present the company in a positive light only. Second, companies usually want people to return to their websites, so they are not likely to post anything controversial. Third, some companies are not forthright about their identities. For example, a baby food maker may set up a website that purports to be a source for parenting information but it really aims to sell their products to parents.

Company websites are reliable for some information. Contact names, locations and addresses are often readily available. Some companies post job openings and FAQ's (Frequently Asked Questions about their product or service). Reliable product information is likely to be found on company websites but not always. Company histories are often posted on websites but the user should be alert to bias.

When evaluating a company website, one should also look to see how often the site is updated and the last time listed for an update. Outdated information on the Internet never seems to be in short supply.

When Librarians Advise to be Wary

Internet users must think like a detective when evaluating information they find online. They must look for clues to help them determine if the source is credible. Librarians provided several guidelines about the types of sites that are not trustworthy and should be examined with a suspicious eye.

One obvious clue is if the website does not identify who or what organization is responsible for the content. A user should ask why the party would not want to be identified.

Personal webpages and those sponsored by any political, religious or hate group are among the sites librarians distrust. This would include sites that cover touchy political issues such as abortion or euthanasia. Sites that provide ratings for products or services, such as Amazon.com, are also suspect because the sample of respondents that rate the product is not a random sample and may not represent unbiased experiences, positive or negative. Sites linked to web guides should be carefully evaluated because people do not always check links thoroughly. When accessing any website, always proceed with caution.

Just because a website is not considered reliable source of information does not mean a user should not visit the site. If a user is interested in the site, librarians suggest that users try to understand the site's purpose and author to help determine credibility, if any.

Poor spelling and grammar are other factors used as indicators of credibility by librarians. Lederer (personal communication, Nov. 27, 2001) says, "George Orwell also said (and I agree) that sloppy writing can only indicate sloppy thinking. So a poorly worded argument is probably not going to be a convincing one."

A website filled with typographical errors and other mistakes should not be automatically disregarded. Lederer explains it this way:

> However, a typo filled/in poor grammar page may be extremely valuable if the source is a person who is, by definition, uneducated because his/her government/society does not allow him/her to be educated. These are primary sources. If the page is in a language not in the person's first there may also be room for errors.

Other Advice from Librarians for Determining Credibility

Of the librarians contacted for this research, none cited an Internet source that they would trust all of the time. In fact, one librarian confessed, "Even my own [website] has an occasional half-truth that I fix ASAP, but things slip by." This is why it is important to check a site several times to see if there are changes. Another reason librarians do not put blind trust into any site is because of the possibility of hackers breaking into the site and changing things. In addition, librarians say there is *always* bias.

Always consider the agenda of the organization or company that provides the website. Some organizations only collect statistics or news quotes that support their position. This does not mean the information is invalid but it may not present the whole picture.

Librarians are the guardians at the information gates and sources that pass muster with them are generally reliable. Librarians are skilled in evaluating sources using time-tested criteria. They point out there is a clear distinction between the resources the library pays for and the information available freely on the Internet.

While libraries have traditionally been home to information presented on paper with ink, modern libraries also house a tremendous volume of electronic information. Sometimes, teachers and students do not make the distinction between electronic information and Internet information. Benjamin (personal communication, Dec. 8, 2001) explains:

> Sometimes students come in and say their teacher said they can't use anything online or from the computer. Consequently, because either the students or the teachers are confusing edited, authoritative, often fee-based databases with any material found on the Internet, students can't take advantage of sources designed to offer reliable and solid information.

A library's homepage is a good starting point for tracking down reliable information. The databases and links provided by the library have undergone the librarians' scrutiny and have been deemed reliable. However, it is still important to read annotations.

Librarians warn against just skimming Internet information. To best evaluate a website, it is important to read carefully and pay attention to factors such as consistency, logic and bias. One should find out as much as possible about the topic and the source of the material.

Last, but not least, one should know who is the source or author of the information presented.

Sources for More Tools to Evaluate Internet Information

Several websites that detail more techniques for evaluating Internet sources are listed in the appendices section of this paper. One search engine noted in particular for its reliability is the Librarians' Index to the Internet at lii.org.

In the end, there is no guaranteed, sure-fire way to confirm information on the Internet any more than one can confirm information found in print materials. Each user must rely on his or her ability and resources to determine what is credible.

Summary of Tips for Evaluating Internet Information

Find out as much as possible about the source. Look at education, experience, background, other works by the same author, what other sources say about the author, financial, political and religious connections, and any other factor that may influence the author or source.

Do not rely on the first source you encounter. Refer to as many sources as is practical. Also, look beyond the Internet for information by consulting books, magazines and journals, and talking to or e-mailing people with firsthand knowledge of the subject.

Look for confirmation of information from other sources. Triangulation, which is finding the same fact on three different pages that are not on the same website, by the same person or sponsored by the same company, is an effective tool. However, realize that confirmation for some types of information such as cutting-edge research may not be possible. In that case, the user must evaluate the new, unconfirmed information against what they already know and learn from other sources about the topic.

Do not forget that even the most reliable sources sometimes make mistakes. This is why it is important to check multiple sources and even go back to a website to see if anything has changed.

Remember that appearances can be deceiving. A sophisticated-looking website with well-written copy may be filled with false information while a primitive-looking, poorly worded website may be loaded with valuable knowledge.

Do not discount information that is available only in a digital format. Some information is only available digitally. Just be sure to know your source.

Consult a librarian for help in seeking information or evaluating a source. Librarians have a wealth of knowledge and experience in finding reliable information.

Do not rely on a search engine to direct you to all the information you need or want. Learn how search engines operate; some provide results based on the popularity of websites. Just because a website is popular does not mean it has the best or most complete information.

Learn as much as possible: about the topic, how the Internet works, how search engines operate, how to critically evaluate information, how websites and webpages are constructed, context, who the source is, reputation of the source, how current the information is, who sponsors the webpage, is the information from a peer-reviewed journal, what is the purpose of the information – to persuade or inform, and any other factor that may affect how the information was created and presented.

Ultimately, librarians say, you can't confirm anything. Learn as much as possible about the source, and what other sources say about the same information. Then critically evaluate and compare the information. In the end, it becomes a judgment call in determining if information is reliable.

CHAPTER V

Conclusions and Recommendations

Conclusions & Implications of the Findings

It appears that the high school students who participated in this study are savvy in some aspects of Internet use and rather naïve in others. While the students realize that just about anybody can post just about anything on the Internet, they tend to believe information they find in more than one place on the Internet. There seemed to be little awareness of the ease in which information can be copied from one website and posted to another, regardless of the reliability of the information.

A false sense of what is and is not credible could have varying degrees of undesirable consequences. While a poor grade may be the worst consequence of one use of invalid information from the Internet, a health decision based on erroneous Internet information could lead to death in the most extreme case.

Students directly stated that parents and teachers provide little guidance in using the Internet. In some cases, students report they are more proficient at using the Internet than either their parents or teachers. Since today's students are the teachers and parents of tomorrow, it is in everyone's best interest to make sure they have the skills to discern valid information from that which is not.

In these particular focus groups, students exhibited confidence in their ability to discern false information from that which is true. However, their confidence did not extend to other people. Some of the students were of the opinion that "other people" believe most or all of what they see on the Internet. This could indicate that the students have developed a sense of skepticism but may be overly confident in their ability to spot erroneous information. However, the students were aware that going to the library and

using books and journals to verify information was a reliable method to ascertain the truth.

Suggestions for Action

The disparity between the great number of evaluative tools available and the few tools students are aware of indicates a need for education in this area. More guidance is needed from parents and educators about how to verify information Making evaluation of information part of the curriculum is one way the students could gain evaluative skills. There also appears to be a need to educate the teachers about the Internet; sometimes the students are more web-savvy than their teachers.

Limitations of the Study

The very nature of focus groups limits the number of participants in the study, and therefore limits the breadth of findings. The responses of twenty students do not comprise a large enough sample from which to draw conclusions about all high school students or Internet users. However, the focus groups do provide insight in many areas:

- the ways high school students use the Internet
- some factors that lead students to believe or disbelieve what they find on the Internet
- the degree of guidance students receive from parents and teachers
- how other people's experiences influence students' perception of what is on the Internet

Another limiting factor is type of students who participated. The students in these focus groups all attended a technical/career school and it is possible that their views and experiences vary from other groups of students such as those in college-prep programs, sports, and students from single-gender schools, just to name a few.

None of the focus groups lasted more than one hour. It is possible that a longer session could have produced more data.

While students were told of the purpose of the focus groups and why they were asked to participate, it is possible that some participants did not have any interest in the topic and therefore had little to contribute.

Group dynamics may have played a role in who spoke out more often and who said little. A group of students who have no prior relationships may have produced different results.

Recommendations for Further Study

Further study in several directions would be useful to build upon the findings of this study. It could be valuable to do a comparative study to see if what students say in focus groups corresponds to the way they actually use information from the Internet. Human memory is not always reliable and responses given in a focus group tend to be subjective. Comparing the students' perceptions with their actions could provide new insight on the ways students evaluate information.

A study of a larger group of students may provide findings that could be applied to a larger population.

Studies among students who are older and younger than the high school students in this study could show when students begin to learn critical evaluative skills, and how they use the skills over time. Findings might indicate at what age careful instruction in the use of the Internet should begin.

A related study of teachers' knowledge of how to evaluate information from the Internet, and how they teach their students about this topic could reveal how educators are succeeding in this subject and where they could improve.

The time of day searching takes place has an effect on classroom Internet searches, as noted by Soloway & Wallace (1997) who describe a decline in search successes by a class of sixth-graders as the day passed. By the afternoon hours when people on the West Coast came online, the students saw longer download times and experienced a greater number of refused connections as well as system crashes. It could be valuable to know how students react to this obstacle and how it affects their choice of sources. Another area of interest, the amount of time students spend searching, could be studied to determine if there is a correlation between the amount of time spent searching and the amount of valid and pertinent information retrieved.

Clearly, the Internet is here to stay and we all have a vested interest in making sure users know how the Internet works, how to find credible sources and how to discern between what is useful and what should be ignored or questioned.

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APPENDICES

Is It True?

How Students Evaluate What They Find on the Internet

April 2001

Focus Group Report

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The Big Question
We already know the Internet is rife with inaccurate and flat-out wrong information. We also know it's impossible to "police" the Internet and individual users are left to their own resourcefulness in discerning what is, and is not, valid information. The question this research seeks to answer is:
How do students evaluate information on the Internet?

Hopefully through the use of focus groups, this question can be answered.

The Participants
Students from the Kent Career/Technical Center (KCTC) in Grand Rapids, Michigan, were asked by their instructors to participate in the focus groups. The students, whose ages range from 16 to 18, come from various high schools in Kent County. The only criteria for participation was that they had used the Internet to retrieve information.

The Moderator
I am a graduate student at Grand Valley State University working on my master's degree in communications. These focus groups are part of my thesis research.

Special Thanks
I especially thank Gail Persons, KCTC principal, for the tremendous amount of help he provided. From allowing me access to students to providing a conference room in which meet, Gail cleared the way. The whole process of conducting focus groups went very smoothly thanks to his help.

The Focus Groups:
The focus groups were held on April 19, 2001, in a conference room at KCTC. Focus groups, by their very nature, supply qualitative rather than quantitative data. The findings resulting from these focus groups may not be applicable to a larger population. However, it does offer an in-depth look at how some students evaluate information from the Internet.

Three separate focus groups (each ran 50 to 60 minutes) were held, comprised as follows:

Group A
Eight female students from the first shift Cosmetology program. Age breakdown:

Age	No. of Participants
16	1
19	3
20	4

Group B
Five male students from the second shift Hospitality program. Age breakdown:

Age	No. of Participants
17	2
18	3

Group C
Seven male students from the third shift A+ Certification program. Age breakdown:

Age	No. of Participants
16	3
17	2
18	2

How Students Use the Internet
The students participating in these focus groups used the Internet for various purposes. Among them are:

- E-mail
- Instant messaging
- Chat rooms
- Sending electronic greeting cards
- Research for homework
- Shopping
- Ancestry research
- Searching for recipes
- Used car histories
- Mapping service
- Downloading music
- Determining value of used cars
- Play games, against computers and other people
- Research items before purchase

Determining the Trustworthiness of Websites
The students are very much aware of the fact that anyone can post anything on the Internet. They know that not everything they see online is true. They compare it to television in regard to the idea that you can't believe everything you see. However, their criteria for determining whether a site is trustworthy is not solidly grounded.

Info on Multiple Sites
One recurring idea was that if information showed up on multiple sites ("two or three" were numbers used by one student) then that information is most likely true. It seems that the students interpret the quantity of sites agreeing with each other with the accuracy

of the information. None of the students brought up the fact that many times, information is simply copied from one website and posted on another site.

Grammar & Typo's

Students do not discount the validity of a site's contents just because of typographical errors or incorrect grammar. One student explained how a technical specialist spoke to his class one day and although the specialist misspoke often (for example using the wrong names of items), he was very knowledgeable. Applying this experience to the Internet, some of the students recognize that a website with errors in grammar and spelling may contain valuable information. One student said if the content sounded good but had typo's he may believe it but he would check it against another source.

Their Own Experiences & Opinions

One student stated that when the Internet was new there was more accuracy but now there is less accuracy because anyone can post anything. She didn't give a definitive reason why she thought there was more accuracy in the early days of the Internet but seemed to have "good old days" feeling.

One participant had experience with online shopping and she got what she expected but she does not buy anything online she can get at a store. Several students shared this personal policy of not buying things online that they can buy at a store.

A student using the Internet for ancestry research couldn't get the info she wanted from the free part of the site. However, she says she could have gotten what she wanted if she were willing to pay for it.

In one situation, two female participants were in a chat room with whom they thought was a guy. It turned out that the "guy" was really their female friend who told them the next day that it was her pretending to be a guy.

One student told how some Internet users have problems with people of other races or who speak other languages. After writing a greeting in Spanish in a chat room, another user replied in an abusive manner, telling her not to use that language in the chat room. Another student told of chat room experience when she used "ebonics" and another chat room user was angered by it. In contrast, one student felt that it didn't matter who you were when using the Internet – that traits like race didn't matter. He and some other students viewed the Internet as a place where you can say things you wouldn't say to someone if you were face-to-face. For example, they said they would joke more or be sarcastic.

In discussing the content of one website, two female students knew the information was wrong because the statements were about them personally. They also described other false statements posted to the site. When asked what other people think about the site, they said others believe it or they read it because they think it's funny. Several students felt that other people see things on the Internet and think they're true.

While seeking information for school report, one student conducted research on the Internet about the drug Ecstasy and rape. She found many sites about raves and the party scene and that there were conflicting statements among different sites about the drug. She described what she found this way: "So many said so many different things . . . It was really hard to know which one was right but books helped out a lot. You can rely better on books than the Internet because anybody can put anything on the Internet and say whatever they want to." Some information was obviously wrong she explained, because one site said Ecstasy did nothing and another says it puts holes in your brain. In the end, books helped her out a lot and she relied on them more than on the Internet.

One student told of a rumor in chat rooms that said Lil Bow-wow, a rap and hip-hop musician, had been raped. The student says she knew it wasn't true because she didn't see any report of it on MTV or BET news. Another way this student knew the report was wrong is because she learned through hearsay that the person spreading the rumor was being sued by Lil Bow-wow. A few of the other students thought it was true that Little Bow-wow had been raped and were surprised when this student told them the rape didn't happen.

The group of all females seemed to mainly use the Internet mainly as a high-tech telephone. While they use it for some homework, e-mail, chat rooms and electronic greeting cards were of most interest to Group A.

One participant related his experience of using the Internet to conduct research for a paper on the Titanic. He found incorrect dates on the Internet and he knew they were wrong because they conflicted with other sources such as encyclopedias, schoolbooks and library books.

A student Looking for "homemade" cooking recipes came up with numerous sites on "homemade explosives." The students realize you do not always get what you're looking for. Some students thought having information on bomb building is dangerous and should not be on the Internet.

One student tells of looking for information on "evolution." He found several different explanations and says they just created confusion for him. He went to a book to really find out what he wanted to know.

One student illustrates the limits of information on the Internet with his search for weather data. He lives in a small town for which the weather services do not provide specifics. Therefore, he has to look at data for the nearest large city.

Students recognize that a lot of information residing on the Internet is not updated For example, one student tells of a site about the White House renovation in 1996. The site has not been updated and if the site were to be useful, it would tell what happened during the renovations but the site does not have current information. This type of outdated information leads to frustration and unanswered questions.

Students' comfort with making purchases online varied widely. Some students say they wouldn't buy things online. Others say they would only buy things online that they couldn't find in a store. One said he would buy only things that cost less than $200 or $300 but only if he couldn't find it in a store. One student specifically shops for shoes online because she can get them in widths not available in stores. The overall preference of students is to not buy things online

Two students described their experience with carfax.com, a site that sells used-car histories. One male student had been to the site but decided he didn't want to pay for the information. Another male student paid for the report to check on his car. He found the information accurate but he didn't know how the site got their information. He knew the report was correct because his parents had owned the car previously.

Both male and female students said they wouldn't turn to the Internet to find advice about personal relationships.

Experience of Family Members & Friends

Students had several comments about the experiences of family and friends who have used the Internet. The experience of family and friends somewhat influences how the students view the Internet.

One student, who rarely uses the Internet, says her dad believes everything on the Internet but she does not share his opinion on this matter.

A female student told how her mother used information about things such as the cost of living in other cities when deciding whether to move to St. Louis.

The mother of one of the male students uses the Internet to buy clothes and he reports she receives what she expects.

The sister of one student uses the Internet to search for cheap airline tickets.

Other people's experiences make students wary.

One student told of the experience of someone at his church who used a credit card online. The credit card number was stolen and used to buy pool tables and stereo equipment. Several other students shared a concern about the security of buying things online.

Another student related the online experience of a friend who met a guy in a chat room who said he was 18. She decided to meet him in Chicago and it turned out that he was really 45.

E-bay is recognized as a place where the buyer must beware. Students recognized there is untrustworthy information on auction sites. For example, one student told of a person

who made a purchase on E-bay of a "Playstation2 box and receipt" for $400. He thought he would get the Playstation2, the box and the receipt but all he got was the box and receipt, but no Playstation2.

When asked what one should do if buying something through E-bay, students say:

- Phone or e-mail the seller,
- Check the E-bay ratings of the seller, and
- Realize it's risky to buy thing through online auctions.

Experience in School

The students were very open about their experiences of using the Internet in school. In general, they seem dissatisfied with their teachers' lack of knowledge of about the Internet. Some older teachers "don't have a clue about the Internet."

Teachers sometimes tell them which sites to use, usually news sites. Other times students are just told to search on their own.

One specific criticism the students have is that some teachers never use the Internet and can't provide any direction and other teachers instruct students to use the Internet in rather superficial ways. For example, one teacher assigns them to look for key points or a "power quote" – an attention grabbing statement – and to elaborate on that. The origin of the statement does not matter nor does who made the statement.

Students tell of instances where some teachers recommend sites even though they do not evaluate those sites in-depth. Teachers also show their bias of opinion through the sites they recommend.

Students report that online translating services are not reliable. One student tells of his experience with the translating service through Alta Vista. He tried to translate English text to Spanish and found the results were inaccurate – sometimes it's the right word but in the wrong form. He knew the results were wrong because he already knew Spanish. Another student concurs and says, "I got a C in Spanish because of that [translators]."

One student said there are sites from other countries that have good information but they are in a foreign language so he can't use them. He thinks there should be a way to translate webpages. He says this would be especially good for travel information or reading newspapers from other countries.

Students are aware that websites sometimes use suspect methods just to get traffic. One cited the example of using the words "Pamela Anderson" somewhere in a websites just to get a high frequency of hits because "Pamela Anderson" is one of the most common searches conducted on the Internet. So, even if a site has nothing to do with Pamela Anderson, it appears in the list of search results and will be accessed by people looking for information on Pamela Anderson, not necessarily what that site has to offer.

Filters

School filters are considered too restrictive by some students because filters block access to information students need. Sometimes the students feel trapped because search results do not provide what they are looking for. For example, a student doing a report on the history of video games wouldn't be able to find information through computers with filters because the schools block everything with the word "games."

Some students report having access denied but say that it does not have much effect on their work. Some students are not bothered by the presence of filters, saying they only block the places "where you shouldn't be."

Furthermore, students report they can get around the filters at school. The students in the focus groups did not seem likely to do so; they report they would lose their computer privileges if they visit prohibited sites. Students know the schools keep records of where students go on the Internet; schools can track the sites students visit and how long they visit those sites.

Students recognize the dual nature of some subjects produces wide-ranging search results. For instance, the results of a search for "gay rights" will be half gay porn, and half will actually be about gay rights. It's possible that a student could inadvertently access a site prohibited under school policy. In such a case, the students say if they leave the site quickly, the school or teachers will not reprimand them for accessing a prohibited site.

Even with filters, students inadvertently access prohibited sites. One student describes looking for information on the White House and typing in the web address whitehouse.com. Whitehouse.com is a porn site whereas whitehouse.gov is the official White House website.

One student relates his recent experience of looking for information on the Vietnam War. He used a search engine which brought up a result that said "all about it" when he clicked on it, it was an Enquirer-type page that said "See Britney Spears Naked." Even when he tried to click out of it, it kept bringing him back to the page and he felt "trapped."

Students think there should be a better way to filter information from the Internet. One offered the idea of putting five unrestricted computers in the front of the room where everyone can see. This way, students have access to information that is filtered but is acceptable for school use. Students using the highly visible computers will not access prohibited sites because they know their computer use is highly visible.

Advertising: Banner Ads and Pop-ups

Students view banner ads and pop-up windows with skepticism. They say you need to be careful about banner ads. For example, if you need to register to win, you will get a lot of junk e-mail as a result. They considered a banner ad junk if it "traps you into something"

or if it is difficult to "click away" the ad. If you click on them, you do not always get what you're led to believe you'll get.

Pop-ups are usually ignored because they're seen as "scams and will trick you." One student says if they (the advertisers) have to jump at you, whatever they have is not worthwhile and it's a desperate advertiser. "I wouldn't give them the time it takes to read it," he says.

About.com was used for homework because "those aren't people's personal webpages. It's like the search engine itself does that." Other recommended search options students liked are Ask Jeeves.com, where one can type in a question and Dogpile, which searches multiple engines.

Methods Used to Discern Credibility of Sources

When the three groups were asked how much Internet information is reliable, the answers varied greatly. Some students estimated the ratio to be as low as 25%, while others thought perhaps 80% of what's on the Internet is reliable.

When asked how one could get accurate information, they recommend using very specific search terms and Boolean logic. This was viewed as one way to get to the "real" information.

They also said to check more than one place. You can find these places by using search engines. Google, Snap, Direct Hit and Meta Crawler were some mentioned by name; students said these are reliable most of the time.

Some students stated that news organizations are always considered trustworthy. Cnn.com and Discovery are sites considered sources of reliable information. They trust them because these companies' reputations are based on their information being accurate and up-to-date.

When they really wanted to make sure information is correct, students turn to books, such as encyclopedias. They realize how easy it is for anyone to post information to the Internet, either intentionally or unintentionally. To be sure, you're getting valid information, students say to turn to books or "anything that's a hard copy."

Another measure students use in discerning if information is credible is whether the information is free or if you have to pay for it. "If you pay for it, it's the real deal," one student explained.

There were differing opinions on whether a company or a general Internet user with a website offers more reliable information. One student gave the example that he'd rather use GM's site to learn more about a 1999 Camaro than use "Bob's Website." However, another student pointed out that GM will only say what is advantageous for them. "Bob"

may be a better source of information, one without a bias toward making the product look good.

When purchasing from Internet companies, students say you shouldn't just trust them. They recommend checking with the Better Business Bureau to look up their reputation. The ways to determine if you should do business with an online company are to:

- Use your own experience,
- Use sites everyone knows about,
- Consider "word of mouth" opinion,
- Double-check what you find,
- Consider the popularity of the site; and
- Read the company's disclaimer (even the 1.5 point size type).

If asked to advise someone on how to find something on the Internet, students do not have specific searching methods and would rely mainly on their own judgment. Rather than tell someone how to find something on the Internet they would go find a site for them. They do advise other users "Don't believe the first thing you see," and to go to the library do verify information.

The use of domain name suffixes (.com, .org , .edu, and .gov) does not give much indication about the reliability of the information but they do give you a clue about where the site is "coming from."

Students say that Geocities, which hosts numerous free webpages, should be avoided because anyone can post whatever they want to the sites.

Yahoo received mixed reviews. Some students saw it as a good search engine and others said it was not reliable. Those who didn't speak highly of Yahoo explained that Yahoo is more concerned about the status of their stock these days.

Students feel government sites are reliable sources of information. But some members of the group recognized that sometimes even the government gets things wrong.

The students in these focus groups say the Internet good for "weird things" you just wouldn't be able to find in a book. An example they give is to get pictures of a hotel you're considering travelling to.

The Internet is seen as an information-rich resource. One student explains it this way, "One trip going down the Internet – you could get so much information it would be like going to thirty libraries."

Conclusions

In general, the students recognize the proliferation of incorrect information on the Internet but they do not seem to have clear-cut methods for determining validity.

One perception shared by several participants was that if the same information is found on multiple sites, they tend to think it's true. One student even said, "If it's in several places it can't be too wrong." There is a tendency to equate the number of websites that agree with each other with the accuracy of the information. Even with probing questioning, none of the students brought up the fact that text from one website can easily be copied and posted to another site.

If the information they access makes sense to them, they accept it as true. The problem with this is that some people are very persuasive and can make even the most outlandish things sound true to a naïve observer. Taking this a step further, one has to wonder if a subject was very complicated and the student didn't understand it, if he or she would just dismiss the information because they couldn't make sense of it. The overriding attitude seemed to be if it sounds good it's good information.

It does not appear as if parents or teachers have given students specific guidance on evaluating and using information from the Internet. Some report that their parents use the Internet, however, several students report that their own search skills are better than their parents'. In the case of teachers, it is often the same case where the students are better acquainted with the Internet than their instructors. This could very well be a case of the students teaching the teachers, however, they may be leading the way using the wrong road map.

Students feel there is a problem in schools with teachers who do not really know what's on the Internet or how to use it. In many cases, students know more about the way the Internet than the teachers. With a lack of guidance from teachers, students rely on their own experience and opinion in evaluating whether information is valid.

There is a general willingness to use the Internet but there are contradictions in some of the students' thinking. On one hand, using the Internet can be frustrating and "takes a lot of time" but students would rather use it than go to the library where you go back and forth between the index and books. Going to the library is considered too much work and it can be a fruitless pursuit if the book that you're looking for is checked out. It could just be that any amount of schoolwork is "too much."

Alarmingly, students didn't seem very concerned about the quality of information they retrieve for school, as long as they find something related to their topic. One student even said he makes stuff up for schoolwork. This laissez-faire approach to schoolwork can not necessarily be said to apply to the way students evaluate information for other purposes, but it does show that the "path of least resistance" is more often taken than not.

There seems to be a general feeling of trust in brand name, band, company and "official" websites. Students seem to accept at face value that websites represent those people that

it appears they represent. Consider the following exchange. For example, for recipes, several of the Hospitality students had a high degree of trust in the Culinary Federation, marthastewart.com and food.com for finding recipes (food.com is run by the Food Network, a television network).

Sometimes blind trust plays a role in evaluating the content of websites. Consider the following exchange that took place during with students in Group A:

> Moderator: Can you trust it if it's an official site?
> Students: *There is general agreement that you can trust an official site.*
>
> Moderator: How do you know it's official?
> Student: It says so.
>
> Moderator: Does anyone say they're an official site when they're not?
> Student: They can't.
>
> Moderator: But what if they say they are?
> Student: They just can't.

While students realize that invalid information abounds on the Internet, they are willing to accept identities at face value. This is well illustrated by the two examples of students using chat rooms: the girls who thought they were chatting with a guy which was really a friend playing a trick on them and the girl who went to Chicago to meet an online acquaintance who said he was 18 but was really 45. Even they realize that people can and do shield their identity, or create a false identity, they are willing trust others to the point of endangering themselves emotionally and physically.

The quality of the website's design carries a lot of weight in determining the trustworthiness of a site. For example, one student said a site with "just a background and a couple little pictures – you know it's not very professional." Another commented, "The website quality reflects what's put into it." Students saw good design as a signal of monetary investment and therefore likely to provide valid information. Notably, what was not mentioned was the fact that software for designing websites is readily and cheaply available, making it easy for even those with a low monetary investment to make their website look sophisticated.

Students recognize some of the limitations to Internet information. Mapping for example, was said by some to be good for getting a general idea of an area but the specifics are not so reliable. While some students have had frustrating experiences with mapping services others find mapping services to be accurate and they like the ability to get "reverse" directions.

The students in these focus groups will buy things on the Internet but only as a last resort. It has to be something not available in a store. The hesitancy is based on a lack of trust of online retailers and a feeling that transactions are not secure.

In general, students rely on their rely on their own experience and common sense in determining if what they find on the Internet is reliable or not. Parents and teachers have not given students solid criteria for verifying information from the Internet. The appearance and structure is one of the key measures students use in evaluating information: the more sophisticated the site, the more likely they are to think that what's on that site is true. Perhaps the most alarming finding is that students would tend to believe information they find at multiple sites simply because it is at multiple sites.

E-mail Inquiry Submitted to Reference Librarians

Dear Reference Librarian (an individual's name was used when it was known):

As a librarian, you are on the front lines of information retrieval. Like nearly every other facet of modern life, information retrieval has been widely affected by the advent and widespread use of the Internet. I am writing to you because you are an expert in information retrieval and I would like to know how you discern valid Internet information from that which is not.

First, a little about me. I am a graduate student at Grand Valley State University (Grand Rapids, MI) studying communications. The focus of my thesis is to determine how students evaluate the validity of information from the Internet and what tools they could use to help them.

I have already conducted focus groups with high school students and my findings show that while they are adept at using the Internet, they are not provided tools by parents or teachers to evaluate what they find. One student even said, "If you see it [information] in more than one place, it's probably true." This is where you come in – I would like to know what tools and techniques you use to determine the validity of information you track down on the Internet. Would you be kind enough to share this knowledge with me? All you need to do is e-mail your reply to me.

Here are a few questions that may get your thoughts in motion, though whatever ideas you can share will be helpful and appreciated:
~Are company websites reliable?
~Is an online journal as reliable as a printed one?
~How do you confirm information found on the Internet?
~How accurate our government sites?
~Are there any sites you would always trust? Always distrust?
~How can Internet users easily determine the validity of information?
~Are the methods of evaluating Internet information different than evaluating information from other sources?
~Do you have one key guideline for finding reliable information?

I thank you in advance for your help. If you have any questions, please e-mail or call me at (616) 682-1348. I look forward to hearing from you soon.

Sincerely,
Maureen Radlick
Graduate Student at Grand Valley State University
Grand Rapids, MI
(616) 682-1348

Online Resources for Information Evaluation Tools

The following websites are recommended for in-depth details on evaluating Internet information.

American Library Association, for criteria geared to the general public and children
http://www.ala.org

Colorado State University Libraries, to evaluate online journals
http://manta.library.colostate.edu/howto/evaljrl.html

Colorado State University Libraries, to evaluate a webpage
http://manta.library.colostate.edu/howto/evalweb.html

Google search engine, to evaluate Internet information
http://www.google.com/search?q+internet+information+evaluation

Georgetown University
http://www.library.georgetown.edu/internet/eval.html

Grand Valley State University, links to several sources to evaluate Internet resources
http://www.gvsu.edu/library/Evaluating.htm

Kathy Schrock's Guide for Educators
http://school.discovery.com/schrockguide/eval.html

University of Michigan, to evaluate websites
http://www.lib.umich.edu/ugl/research/evaluation/main.html

The World Wide Web Virtual Library
http://www.vuw.ac.nz/~agsmith/evaln/evaln.htm

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P. 1 of 1 Thank you Monica!

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